

REMARKS

Claims 21-57 are all the claims pending in the application.

New claims 21-27, 34-36, 28, 48-54 and 56-57 relate to prior pending claims 1, 3-7, 9, 10, 8, 11, 13, 15, 17-20, 14, 16. Support for the changes added to claims 21 and 33 maybe found, for example, in the original claims, Figure 1 and page 1, lines 17 to 20, of Applicants' specification. Support for new claim 27 may be found, for example, at lines 13 to 15 on page 5 of Applicants' specification. Support for new claim 28 may be found lines 16 to 17 on page 7 of Applicants' specification. Support for new claims 29 and 45 may be found, for example, in the originally filed claims and at lines 31 to 33 on page 8 of Applicants' specification. Support for new claims 30 and 46 may be found, for example, in the originally filed claims and at line 2 on page 8 of Applicants' specification. Support for new claims 31 and 47 may be found, for example, in the originally filed claims and at lines 11 to 12 on page 8 of Applicants' specification. Support for new claim 32 may be found, for example, at lines 19 to 21 on page 27 of Applicants' specification. Support for new claim 37 may be found, for example, at lines 34 to 35 on page 7 of Applicants' specification. Support for new claim 38 may be found, for example, at lines 26 to 27 on page 7 of Applicants' specification. Support for new claim 39 to 44 may be found, for example, in the originally filed claims.

I. Formal Matters - The Interview

Applicants wish to thank the Examiner for the helpful and courteous interview conducted on September 9, 2003. The "Interview Summary" accurately memorialized the general discussion. In addition to discussing the rejections of the claims, the International Preliminary Search Report was discussed during the interview.

II. The Objection to the Drawings

The drawings are objected to as allegedly containing improper labels.

The present Amendment includes replacement sheets for Figures 9-11. In the replacement sheets, the labels of Figures 9-11 are changed as requested by the Examiner. For the above reasons, it is respectfully submitted that Applicant's drawings fully comply with 37 C.F.R. §§1.81, 1.83 and 1.84 and it is requested that the objection to the drawings be reconsidered and withdrawn.

In order to avoid prosecution after allowance, the Examiner is requested to approve the drawings of the replacement sheets.

III. The Rejections Under 35 U.S.C. §112 and the Objection to Claim 19

Claims 2, 9, 10, 12, 14, 16 and 19 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite.

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In particular, the Examiner states that in claims 2 and 12 the relation between ceramic substrate and at least one conductor layer is not clear and the Examiner states that claim 19 should be depend from claim 18.

Claim 19 is objected to for an alleged informality.

Applicants respectfully submit that the present claims are clear and definite as written and that they particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. §112, second paragraph, and the objection to the claims in view of the following remarks.

The relevant claims are amended to clearly point out the relation between the ceramic substrate and the at least one conductor layer. For example, claims 33, 42 and 55 recite that the ceramic substrate has a conductor layer on its surface and additionally at least one conductor layer inside.

Regarding the claim objection, it is respectfully submitted that all of the dependent claims are in proper form. For example, claim 53 depends on claim 52.

For the above reasons, it is respectfully submitted that Applicants' claims are clear and definite and it is requested that the rejection under 35 U.S.C. §112 and the objection be reconsidered and withdrawn.

IV. Brief Summary of the Present Invention

Prior to addressing the Examiner's specific rejections, Applicants submit the following brief summary of the present invention. The summary of the invention is provided to the Examiner for the purposes of assisting the Examiner in understanding the claimed invention and the differences between the claimed invention and the cited art.

One aspect of the present invention relates to "a wafer prober for probing a semiconductor wafer having a ceramic substrate and a conductor layer formed on a surface of the ceramic substrate, wherein said ceramic substrate comprises at least one selected from the group consisting of nitride ceramics, carbide ceramics and oxide ceramics" (claim 21).

Another aspect of the present invention relates to "a wafer prober for probing a semiconductor wafer having a ceramic substrate and a conductor layer formed on a surface of the ceramic substrate and at least one conductor layer is formed inside said ceramic substrate" (claim 33).

According to the present invention, the wafer prober comprises a ceramic substrate with a high rigidity. Probing of a wafer is performed by placing the wafer on a conductor layer formed on the ceramic substrate and pressing a probe card on the wafer. Since the ceramic substrate has a high rigidity, the wafer does not undergo warpage when pressed by tester pins of the probe card. The present invention enables a precise probing of a wafer.

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In a wafer prober, it is necessary to form a conductor layer on a surface of a ceramic substrate. The prober detects a presence of a short circuit by applying a voltage to the conductors on the wafer and the ceramic substrate and measuring the resistance. Without a conductor layer, such a measurement cannot be performed.

V. The Rejection Under 35 U.S.C. §102(f)

Claims 1-4, 6-16 and 18-20 are rejected under 35 U.S.C. §102(f) allegedly because the Applicants did not invent the claimed subject matter.

Applicants respectfully submit that the inventorship of present invention is correct and that Niwa does not raise any issues under 35 U.S.C. §102(f) and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

The present application was filed October 15, 1999 as PCT/JP99/05693, designating the U.S. Thus, the effective filing date of the present application is October 15, 1999. The filing date of the application that issued as U.S. Patent No. 6,475,606 to Niwa is January 22, 2001. The application that issued as U.S. Patent No. 6,475,606 to Niwa claims benefit to JP-2000-017857, filed January 21, 2000. Thus, the present application has an effective filing date which is earlier than the effective filing date of Niwa and the present application has an effective filing date which is earlier than the priority date of Niwa.

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The present invention relates to a wafer prober comprising a ceramic substrate. Niwa discloses a nitride ceramic containing oxygen and silicon as a ceramic substrate for semiconductor manufacturing/inspection. Applicants' claims are generic to a nitride ceramic as disclosed in Niwa.

However, Takeo Niwa was not involved in the development of the wafer prober of the present invention. Niwa was informed of the wafer prober of the present invention and independently developed the nitride ceramic containing oxygen and silicon as disclosed in U.S. Patent No. 6,475,606. Thus, Niwa discloses a subordinate concept of the present invention.

In view of the above, it is respectfully submitted that the inventors of the present application and the inventor of Niwa are correct and it is requested that the rejection under 35 U.S.C. §102(f) be reconsidered and withdrawn.

VI. The Rejection Under 35 U.S.C. §103 Based on Niwa

Claims 5 and 17 rejected under 35 U.S.C. §103(a) as being unpatentable over Niwa further in view of Zehnpfennig et al. (US 4385434).

As discussed above, Niwa does not raise issues under §102(f). Additionally, the earliest date that Niwa is available as art is its filing date, January 22, 2001. As discussed above, the effective filing date of the present application is October 15, 1999. Thus, Niwa is not available as art against the present application.

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Since Niwa is not available as prior art under 35 U.S.C. § 102(a), (b) or (e), it appears that the §103 rejection based on Niwa is based on availability under §102(f).

Ibiden Co., Ltd. is the assignee of Niwa (U.S. Patent 6,475,606), as indicated on the face of the patent. Ibiden Co., Ltd. is also the assignee of the instant Application by virtue of an Assignment from all of the inventors thereof executed on December 14, 2000, and recorded December 21, 2000 at reel 012945, frame 0371.

The undersigned hereby represents that Niwa and the claimed invention were, at the time the invention of the instant application was made, owned or subject to an obligation of assignment to Ibiden Co., Ltd.

Since the present invention and Niwa were commonly owned at the time of the making of the present invention, Niwa is not available as prior art under §103(c).

For the above reasons is requested that the rejection under 35 U.S.C. §103(a) be reconsidered and withdrawn.

VII. The Obviousness-Type Double Patenting Rejection

Claims 1-4 and 9-16 are rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-2 of U.S. Patent No. 6,475,606 (Niwa).

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Claims 5-8 and 17-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-2 of U.S. Patent No. 6,475,606 to Niwa in view of Zehnpfennig et al and IBM Technical Disclosure Bulletin.

As discussed above, the present application was filed October 15, 1999 as PCT/JP99/05693, designating the U.S. Thus, the effective filing date of the present application is October 15, 1999. Additionally, the present application entered the national stage under §371 on October 24, 2000. The filing date of the application that issued as U.S. Patent No. 6,475,606 to Niwa is January 22, 2001.

Therefore, the present application was filed earlier than Niwa. However, Niwa issued first. Further, the actions of the USPTO dictated the rate of prosecution. If a later improvement invention issues first, any obviousness-type double patenting rejection applied to a claim in the first-filed application must be supported by a conclusion that the claimed inventions (in the patent and the application) are obvious over each other, that is, a two-way obviousness determination must be made. In re Bratt, 19 USPQ 1289 (Fed. Cir. 1991). See also MPEP §804.II.B.1.(b).

It respectfully submitted that, in view of the claimed subject matter and the comparative data of Niwa, the present obviousness-type double patenting rejection does not meet the two-way obviousness determination.

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For the above reasons, it is respectfully submitted that the subject matter of claims 21-57 is neither taught by nor made obvious from the disclosures of Niwa, either alone or in combination with Zehnpfennig et al and IBM Technical Disclosure Bulletin, and it is requested that the obviousness-type double patenting rejection be reconsidered and withdrawn.

VIII. The Rejections Based on Yamaguchi

Claims 1-2 and 11-12 are rejected under 35 U.S.C. §102(b) as being anticipated by Yamaguchi et al. (JP 63-047382).

Claims 3-6, 8-10, 13-18 and 20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yamaguchi et al in view of IBM Technical Disclosure Bulletin (IBM '403).

Claims 7 and 19 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yamaguchi and IBM '403 in view of Zehnpfennig et al.

Claims 3-10 and 13-20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yamaguchi et al further in view of Tsujide et al.

Applicants respectfully submit that the present invention is not anticipated by or obvious over the disclosures of Yamaguchi et al, alone or in view of IBM '403, Zehnpfennig et al or Tsujide et al, and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Yamaguchi et al discloses a wiring board comprising a nitride ceramic board and a metal layer on the surface thereof. However, the wiring board is not used for probing a wafer. Yamaguchi et al does contain a disclosure related to a wafer prober, and does not suggest to use a wiring board for probing a wafer. Yamaguchi et al does not teach about the effect of the present invention. In other words, Yamaguchi et al does not teach "a wafer prober for probing a semiconductor wafer having a ceramic substrate" and does not teach that when a ceramic substrate with a high rigidity is used for a wafer prober, warpage of a wafer is suppressed so that a precise probing of a wafer can be carried out.

It appears that the Examiner considers the wiring board of Yamaguchi et al to meet Applicants' claims. However, Applicants' claims are directed to a wafer prober. "The effect preamble language should be given can be resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Corning Glass Works v. Sumitomo Electric U.S.A. Inc., 9 USPQ2d 1962, 1966 (CA FC 1989). The Court in Corning determined that the term "an optical waveguide" in the preamble does not merely state a purpose or intended use for the claimed structure, rather, those words do give "life and meaning" and provide further positive limitations to the invention claimed. Id. at 1966.

Further, the meaning of the preamble may be a vital term of a count and must be taken from the application in which the counts originated. Kropa v. Robie, 88 USPQ 478 at 481 (CCPA 1951). Where the preamble of the claim or count is expressly or by necessary implication given the effect of a limitation, the introductory phrase is deemed essential to point out the invention defined by the claim or count and the preamble is considered necessary to give life, meaning, and vitality to the claims or counts. Id.

Accordingly, it is respectfully submitted that the claimed invention is not anticipated by and not obvious over Yamaguchi et al.

Zehnpfennig et al discloses an alignment system which is equipped with a Peltier device. The system, however, does not probe a wafer on a ceramic substrate. No figure of Zehnpfennig et al shows a conductor layer on the surface of the system. See, for example Figure 7 of Zehnpfennig et al.

IBM '403 relates to a technology for packaging chips. IBM '403 is not related to the technology for probing a wafer. The scale of the product and the technical field of IBM '403 are different from those of the present invention.

Tsujide relates to an apparatus for testing semiconductor chips. A wafer 1 to be tested is placed on a stage 14 having a plurality of holes 15. Testing is performed by overlaying a testing substrate 2 on the wafer 1 so that pads 3 disposed on the wafer 1 are connected electrically with pads 4 disposed on the testing substrate 2

through anisotropic conductive layers 5 provided on the pads 4 (Tsujiide, col. 5, lines 5 to 16 and Fig. 2). However, there is no conductor layer formed on the stage 14. Testing of a wafer is carried out differently from the present invention. Further, no material for the stage 14 is disclosed. Tsujiide does not teach that when a ceramic substrate with a high rigidity is used for a wafer prober, warpage of a wafer is suppressed so that a precise probing of a wafer can be carried out. Moreover, contrary to the Examiner's indication, Tsujiide does not teach that the material of the anisotropic conductive layers 5 is porous material.

Even if the cited references are combined, it is respectfully submitted that the present invention would not have been selected and would not have been obvious to one of ordinary skill in the art.

Accordingly, it is respectfully submitted that the present invention is not anticipated by and not obvious over Yamaguchi et al alone, or further in view of any of Zehnpfennig et al, IBM'403 and/or Tsujiide and it is requested that the rejections under 35 U.S.C. §§102 and 103(a) be reconsidered and withdrawn.

IX. Conclusion

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the objection to the claims, the rejection under 35 U.S.C. §112, the rejections under 35 U.S.C. §§102 and 103 and the obviousness-type double patenting rejections be reconsidered and withdrawn. Applicants

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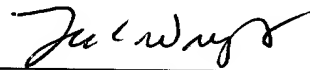
respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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